

Remarks:

Claims 1, 2, 7, 12, 14, 15, and 22-25 remain in this application. Claims 5-6, 8-11, 13, and 16-21 have been canceled. Claims 3 and 4 have been withdrawn. Claims 1-4, 7, 12, 14-15, and 22 have been amended. Claims 23-25 have been added.

In a telephonic interview with Examiner Reimers on January , 2006, Examiner suggested amending the claims to more particularly claim the spherical thread profile. Claim 1 has been amended to include “a screw thread spiraling around a portion of the hemispherical convex back, the screw thread having a thread crest and a thread root, the thread crest following a spherical profile as it spirals around the hemispherical convex back toward the polar region”.

It is noted that the original claims in this case claimed a spherical thread with dependent claims distinguishing between threads with a spherical thread crest with variously shaped thread roots and threads with a spherical thread root and variously shaped thread crests. Amended claim 1 now specifically claims a liner with a “thread **crest** following a spherical profile as it spirals around the hemispherical convex back”. New claim 23 has been added to capture the spherical thread root configuration formerly included in claim 1. Claim 23 is identical to amended claim 1 except that it claims a liner with a “thread **root**, rather than a thread **crest**, following a spherical profile as it spirals around the hemispherical convex back”.

It is also noted that withdrawn claims 3 and 4 have been amended to be consistent with the other amendments in this response. Upon allowance of generic claim 1, applicant requests withdrawal of the restriction of claims 3 and 4 as they depend from claim 1 and add further specificity to the thread form of claim 1. Similarly, new claims 24 and 25 are identical to amended claims 3 and 4 and depend from new claim 23.

Claims 1-2, 7, 12-14, 16 and 20-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Noiles 3,848,272. Examiner interprets Noiles (FIG. 21) as disclosing a spherical profile thread spiraling around the shell and liner. Applicant respectfully disagrees. FIG. 21 of Noiles, as well as the specification, fails to disclose a spherical thread profile. Referring to the specification at column 8 lines 61-66, part 162 (insert) in FIG. 22 is the same as part 162 in FIG. 21 with the exception that is made of metal and split into two mating halves. The geometry, including the thread form, is the same. With the insert split into two halves, more of the thread detail is visible in the lower half of FIG. 22 and thus reference to FIG. 22 is helpful in understanding the thread form in both FIGS. 21 and 22. Noiles' thread is formed on a clearly cylindrical "threaded ring portion 164". Column 8 lines 41-42. Noiles clearly does not disclose "the thread crest following a spherical profile as it spirals around the hemispherical convex back" as claimed in amended claim 1. As can be seen in FIGS. 21 and 22, the threads are formed only at the equator of the insert. Furthermore, Noiles states that "the insert socket 12 defines more than a hemisphere so that the hip ball is retained within the socket". 8:48-51. If Noiles' threads followed a spherical profile as they spiral, the threads diameter would be diminishing toward the opening of the liner since the socket defines more than a hemisphere. Threads with such a configuration could be neither assembled nor disassembled and thus Examiner's interpretation destroys the function of Noiles' device. As is clear from FIGS. 21 and 22, Noiles' discussion of a threaded ring portion, the liner being greater than a hemisphere, and the functional limitations, Noiles' thread crest does not follow a spherical profile nor does it spiral around the hemispherical convex back as claimed in amended claim 1. Thus, amended claim 1 does not read on Noiles and is therefore allowable over Noiles.

With respect to Examiner's argument that Noiles fails to disclose a cylindrical thread formed on a raised cylindrical ring adjacent the equator of the insert, Applicant directs Examiner to FIG. 22 which clearly shows just such a construction. The lack of a spherical thread is further supported by Applicant's previous remarks. The claims depending from claim 1 are allowable over Noiles for the same reasons as claim 1. The claims are further allowable over Noiles as follows:

Claim 2 is further allowable over Noiles because Noiles fails to disclose "the liner thread root being coincident with the hemispherical convex back and the liner thread crest projecting beyond the spherical convex back and following a spherical profile spaced from the hemispherical convex back". Noiles' thread crest "does not follow a spherical profile as it spirals" and his thread root is raised above the liner back on the "ring portion 164". Referring to FIG. 22, there cannot possibly be a dispute that Noiles thread root is raised above the liner back and that it is clearly not coincident with a hemispherical convex back.

Amended claim 7 is further allowable over Noiles because Noiles fails to disclose "the liner thread crest spiraling over most of the hemispherical convex back between the face and the polar region". Noiles thread is limited to a cylindrical "ring portion 164" adjacent the shell and insert equator and does not spiral around a hemispherical convex back at all, much less most of the way between the face and polar region.

Amended claim 12 is further allowable over Noiles because Noiles fails to disclose "a self-locking arrangement in which a portion of the shell thread profile differs in a dimension from a corresponding portion of the liner thread profile, the shell thread and liner thread defining a self-locking thread interference". Examiner refers to column 8 lines 43-46 and 58-60 as disclosing a

self-locking arrangement. Applicant respectfully disagrees. Lines 43-46 describe notches 166 which apparently accept a tool to facilitate turning the insert into the shell. Lines 58-60 merely describe threading the insert into the shell until it is tightly positioned within the shell.

Applicant's claim 12 claims a mismatch in thread dimensions resulting in an interference fit between the liner and shell that locks the assembly together. Noiles fails to disclose any such mismatch or interference. Examiner has repeated the previous rejection without responding to applicant's arguments regarding the claimed self-locking feature. Applicant requests clarification as to how the cited lines from Noiles disclose the claimed "self-locking arrangement in which a portion of the shell thread profile differs in a dimension from a corresponding portion of the liner thread profile, the shell thread and liner thread defining a self-locking thread interference".

Claim 22 is further allowable over Noiles because Noiles fails to disclose "the liner thread crest being coincident with the spherical convex back and the liner thread root extending into the spherical convex back and following a spherical profile spaced from the spherical convex back". Noiles thread is not spherical and both his thread root and thread crest are raised above the liner back on the "ring portion 164". Examiner has not cited any disclosure in Noiles relative to the claimed thread root location. In fact, Examiner's previous assertion that Noiles' thread crest is coincident with the convex hemispherical back makes it impossible for Noiles' thread root to be coincident with the convex hemispherical back. Applicant respectfully notes that if Noiles' thread crest and thread root are both coincident with the back, Noiles' device would have no threads at all.

Claims 1-2, 7, 12-14, 16, and 20-22 are rejected under 35 U.S.C. 102(b) as being anticipated by English 4,004,300.

Examiner interprets English as disclosing a spherical profile thread. Applicant respectfully disagrees. English specifically states that the liner defines “an annular portion 18, externally threaded, with a reduced cylindrical portion 19 blending into a hemispherical end 20”. English specifically states that the threaded annular portion 18 is separated from the hemispherical end 20 by a cylindrical portion 19. English’s FIGS. 1 and 2 clearly show a threaded cylindrical ring (i.e. annular portion 18) adjacent a non-threaded cylindrical portion 19 then blending into a non-threaded hemispherical end 20. Similarly, in the embodiment of FIG. 3, the threads are confined to a cylindrical ring adjacent the equator of the liner and adjacent a non-threaded cylindrical portion 33. Furthermore, English states that the recess for receiving the threads is “a screw-cut **cylindrical** bore part 24”. 4:15-19 A screw-cut cylindrical bore for co-operating with an externally threaded annular portion 18 leaves no question as to the fact that the threads are cylindrical. Applicant respectfully requests clarification as to where English discloses “the thread crest following a spherical profile as it spirals around the hemispherical convex back”.

Furthermore, English, similar to Noiles discloses the liner defining more than a hemisphere, hence the cylindrical portions 18, 19 and the trapping of the ball head. If English’s threads followed a spherical profile as they spiral, the threads diameter would be diminishing toward the opening of the liner since the socket defines more than a hemisphere. Threads with such a configuration could be neither assembled nor disassembled and thus Examiner’s interpretation destroys the function of English’s device. For all of these reasons, claim 1 and the claims

depending from it do not read on English and are therefore allowable over English. The claims are further allowable as follows:

Claim 2 is further allowable over English because English fails to disclose “the liner thread root being coincident with the hemispherical convex back and the liner thread crest projecting beyond the spherical convex back and following a spherical profile spaced from the hemispherical convex back”. English’s thread does not “follow a spherical profile as it spirals”. Furthermore, it is formed on “annular portion 18” not on the hemispherical convex back.

Amended claim 7 is further allowable over English because English fails to disclose “the liner thread crest spiraling over most of the hemispherical convex back between the face and the polar region”. English’s thread is limited to a cylindrical “annular portion 18” adjacent the shell and insert equator. It is specifically spaced from the hemispherical convex back 20 and therefore does not spiral around the hemispherical convex back at all, much less most of the way between the face and polar region.

Amended claim 12 is further allowable over English because English fails to disclose “a self-locking arrangement in which a portion of the shell thread profile differs in a dimension from a corresponding portion of the liner thread profile, the shell thread and liner thread defining a self-locking thread interference.” Examiner refers to column 4 lines 51-53 as disclosing a self-locking arrangement. The cited text from English merely states that the head 16 is screw-cut at 37 to engage with the threaded portion 32 on the liner. Applicant’s claim 12 claims a mismatch in thread dimensions resulting in an interference fit between the liner and shell that locks the assembly together. English fails to disclose any such mismatch or interference. Examiner has repeated the previous rejection without responding to applicant’s arguments regarding the

claimed self-locking feature. Applicant requests clarification as to how the cited lines from English disclose the claimed “self-locking arrangement in which a portion of the shell thread profile differs in a dimension from a corresponding portion of the liner thread profile, the shell thread and liner thread defining a self-locking thread interference”.

Claim 22 is further allowable over English because English fails to disclose “the liner thread crest being coincident with the spherical convex back and the liner thread root extending into the spherical convex back and following a spherical profile spaced from the spherical convex back”. English’s thread does not “follow a spherical profile as it spirals”. Furthermore, both his thread root and thread crest are spaced from the convex hemispherical back. 4:3-7 Furthermore, as pointed out with reference to Noiles’, Examiner cannot contend that English’s thread root is coincident with the hemispherical convex back as in claim 2 and that the thread crest is coincident with the hemispherical convex back as in claim 22 else English would not be threaded at all.

Amended claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Noiles in view of Park 4,491,987. Examiner relies on Park to teach the use of bone cement with a hip prosthesis. Amended claim 15 depends from claim 1 and is allowable for the same reasons as claim 1.

Amended claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over English in view of Park 4,491,987. Examiner relies on Park to teach the use of bone cement with a hip prosthesis. Amended claim 15 depends from claim 1 and is allowable for the same reasons as claim 13.

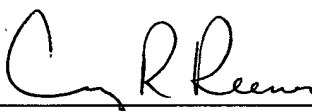
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Note that "a spherical thread profile" finds support in the figures and in the specification at paragraph [0023] lines 5-12 and paragraph [0025] lines 14-16.

In a telephonic interview on February 1, 2006, Applicant discussed the substance of this Amendment with Examiner Reimers and Examiner Robert and agreement was reached with regard to all claims including withdrawal of the restriction relative to claims 3 and 4 and entering new claims 23-25. Thus, the claims remaining in this case are in condition for allowance and Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Examiner is encouraged to contact Applicant by telephone with any questions.

Respectfully submitted,

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